

November 6, 1996

Dr. John V. Massey, President and CEO  
Sierra Nuclear Corporation  
One Victor Square  
Scotts Valley, CA 95066

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION CONCERNING CONFIRMATORY  
ACTION LETTER 97-7-001 (TAC NO. L21140)

Dear Dr. Massey:

On August 26, 1997, NRC issued a request for additional information (RAI) to Sierra Nuclear Corporation (SNC). The purpose of the RAI was to provide SNC the opportunity to address questions raised by the staff concerning SNC's July 30, 1997, response to Confirmatory Action Letter (CAL) 97-7-001. On September 18, 1997, the Nuclear Regulatory Commission received SNC's response to five of the eight questions contained in the RAI. NRC understands that answers to the remaining three questions are forthcoming.

It should be noted that in addition to SNC's CAL and RAI responses, the staff utilized information provided by the VSC-24 User's Group (Entergy Operations Inc. [Entergy], Consumers Power Company, and Wisconsin Electric Power Company) in response to CALs 97-7-002, 97-7-003, and 97-7-004, as supplemented, to assess SNC's response to the RAI.

The staff accepts SNC's responses to RAI Questions 6 and 7. However, the staff will review the appropriate certification of the Charpy V impact results, as discussed in the responses, during the closure of CAL 97-7-004 for Point Beach Nuclear Plant. SNC's response to RAI Question 8 was incomplete. SNC did not provide justification that the acceptance criteria for the ultrasonic testing (UT) of the multi-assembly sealed basket (MSB) shell would detect all laminations that could lead to lamellar tearing during MSB seal welding operations. However, confirmation of the MSB closure weld structural integrity would subsume questions about appropriate acceptance criteria for laminations. Therefore, the staff will defer RAI Question 8 until RAI Question 1 is resolved.

The staff has no technical objection to the proposed corrective actions being implemented to inhibit MSB closure weld cracking, as proposed in SNC's response to the CAL and RAI Question 1. However, SNC failed to describe testing, surveillance, or monitoring that was, or could be used, to confirm its conclusions, as requested in the RAI. This confirmation is requested, based on 10 CFR 72.236(l), to demonstrate that the corrective actions will reasonably maintain confinement of radioactive material under normal, off-normal, and credible accident conditions.

During development of the RAI, the staff conducted several teleconferences with the utilities to convey the staff's concern regarding the lack of confirmatory testing or examination. During the discussions, the staff indicated that an acceptable confirmation method would be a volumetric examination such as ultrasonic testing (UT). On October 16, 1997, the staff conducted a teleconference with the utilities and SNC to allow the utilities the opportunity to provide feedback on the feasibility of performing UT of one or both of the MSB closure welds. On October 21, 1997, a second teleconference was conducted between the same parties to

discuss the utilities' proposal of an alternate method, a pneumatic pressure test of the area between the structural and shield lids. During the discussion, the staff informed the participants that while a pneumatic pressure test confirmed leak tightness under certain accident conditions, it did not adequately demonstrate that the weld had sufficient integrity to meet all design basis conditions. The staff further stated that UT appears to be the best confirmation method available; however, the staff would continue to review other options submitted by the utilities and SNC.

Based on the staff's review of SNC's September 18, 1997, RAI response and subsequent discussions with the utilities and SNC, the staff believes that additional information (see enclosure) is required. SNC must provide adequate confirmation that the proposed corrective actions provide reasonable assurance that the confinement of radioactive material under normal, off-normal, and credible accident conditions will be accomplished. In addition, the staff needs clarification of SNC's September 18, 1997, response to RAI Question 5.

A response to the enclosed questions is requested within 60 days of the date of this letter. If SNC cannot respond by this date, please notify me, in writing, as soon as possible.

If you have any questions or comments related to this letter, please contact either Timothy J. Kobetz at (301) 415-8538 or Dennis G. Reid at (301) 415-8556. Please reference the above TAC No. in future correspondence related to the CAL.

Sincerely,

Charles J. Haughney, Acting Director  
Spent Fuel Project Office  
Office of Nuclear Material Safety  
and Safeguards

Dockets 72-1007, 72-13, 72-7, 72-5

Enclosure: Request for Additional Information

cc: Service Lists

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REQUEST FOR ADDITIONAL INFORMATION  
FROM SIERRA NUCLEAR CORPORATION  
CONCERNING CONFIRMATORY ACTION LETTER 97-7-001

Questions

1. Provide details on method(s) to be implemented to confirm that the proposed welding practices, associated with the multi-assembly sealed basket (MSB) closure welds, will provide reasonable assurance that the cask maintains structural integrity. The discussion should detail how the method(s) would provide the reasonable assurance required by 10 CFR 72.236(l). In addition, the discussion should include how SNC will incorporate the proposed method(s) into the Certificate of Compliance (COC) and the Safety Analysis Report (SAR) for the VSC-24 and the schedule for initiating those actions.

Basis for Question

Section 72.236 (l) states that "The cask and its systems important to safety must be evaluated, by appropriate tests or by other means acceptable to the Commission, to demonstrate that they will reasonably maintain confinement of radioactive material under normal, off-normal, and credible accident conditions."

Experience has shown that, in some instances, previous welding methods did not provide adequate welds. Adequate quality control measures were not in place to confirm that the weld procedures met the requirements of 10 CFR 72.236 (l).

The staff reviewed the proposed changes to the welding process, including preheat, use of low hydrogen electrodes (<10ml diffusible hydrogen per 100g deposited weld material), and sequenced welding technique. The staff agrees with SNC and the utilities that these changes should inhibit hydrogen induced cracking. However, SNC failed to describe testing, surveillance, or monitoring that was or could be used to confirm its conclusions, as requested by the staff in the previous request for additional information (RAI) dated August 26, 1997. The staff believes volumetric examinations (e.g., ultrasonic testing [UT]) of one or both welds may be one such confirmation method.

The corrective actions proposed by SNC and the User's Group are based on the ASME Code, Section III. The Code assumes that welding is performed in a dry atmosphere, the welds are full penetration welds, and the welds receive volumetric inspection. However, both the structural and shield lid welds are performed in a moist atmosphere, are not full penetration welds, and do not currently receive a volumetric inspection. Experience has shown that the welding methods may not always be reliable. Therefore, the staff believes that volumetric inspection or a combination of some other type testing, surveillance, or monitoring is needed to demonstrate, with reasonable assurance, that the welds on MSB closures have sufficient integrity to meet the requirements of 10 CFR 72.236 (l).

UT performed on the final structural weld would provide assurance to the staff that there are indeed no unacceptable indications in the weld metal. Part 72 requires, and the VSC-24 SAR describes, that the MSBs are designed and certified to withstand the effects of handling drop accidents without impairing its capability to perform safety functions (i.e., confinement, safe handling, retaining an inert environment, and retrievability). The structural design basis for the MSB welds are the allowable stresses for the service limits defined by the ASME Code, Section III, Subsection NC. The UT acceptance standard is NC-5330. However, it may not be practical to strictly adhere to Section III acceptance criteria since the welds are not made under the conditions assumed by the Code. Therefore, variances in flaw acceptance criteria, as mandated in ASME Code, Section III, may be acceptable to the staff.

While the staff will also consider other methods of testing, surveillance, or monitoring, either alone or in combination with one another, to confirm the assumptions for the new weld procedure, the staff believes that a volumetric inspection, such as UT, would provide assurance that the welds will maintain confinement of radioactive material under normal, off-normal, and credible accident conditions as required by 10 CFR 72.236(l). In addition, the UT method could be adapted to assess the structural and confinement integrity of previously loaded casks.

2. Discuss how SNC will update licensing documents, such as the COC and SAR, to take into account both the effects of preheat for welding and concerns noted in Inspection Report 72-1007/97-204 regarding MSB drain-down time. The schedule for completing this item should be included in the discussion.

#### Basis for Question

The staff reviewed the calculations performed by Entergy and SNC, submitted in response to RAI Question 5. The staff determined that the calculation performed by Entergy is non-conservative in that the methodology used by Entergy assumes the heat transfer is at steady state conditions. However, the staff also determined that the calculation performed by SNC is conservative and provides adequate assurance that reducing the time in COC Technical Specification 1.1.12, "Time to Drain the MSB," by 1 hour will prevent water inside the MSB from boiling. Notwithstanding, information was not included in the RAI response as to how the revised calculation would be incorporated into the licensing documents. We understand that you have responded to this issue, in part, by revising the SAR by letter dated July 30, 1997. However, this change must also be reflected in the COC, thus requiring an amendment.

## ROUTING AND TRANSMITTAL SLIP

DATE: November 13, 1997

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	<u>INITIAL</u>	<u>DATE</u>
1. DGReid	_____	<u>10/ /97</u>
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3. EJLeeds	_____	<u>10/ /97</u>
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5. Secretary (dispatch)	_____	<u>10/ /97</u>

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AS REQUESTED:	NOTE AND RETURN:	PREPARE REPLY:
COORDINATION:	PER CONVERSATION:	

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MEMORANDUM/LETTER FOR: Dr. J. V. Massey, President and CEO  
Sierra Nuclear Corporation

FROM Charles J. Haughney, Acting Director  
Spent Fuel Project Office

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION CONCERNING  
CONFIRMATORY ACTION LETTER 97-7-001 (TAC NO. L21140)

FILE NAME: G:\SIERNUCL\WELDING\UTRAI.SNC

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ORIGINATOR\SECRETARY	Dennis G. Reid \	ROOM NO.\BLDG. : 06G22
	Debra Damiano	PHONE NO. : 415-8556 \1431

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